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Golf ball

The problem with golfing is always the fact that while playing balls get lost in the bushes or in the grass which then can not be found anymore. There are already considerations to equip the balls with a little electronic transmitter for tracing their location with the usual methods.

On the one hand an equipment of golf balls like this is far too expensive, on the other hand this idea fails concerning space and weight. Keep in mind that such a transmitter would need also power supply of some sort. One has to consider that the diameter as well as the weight of a golf ball are fixed by international Golf associations. According to the momentarily valid rules the weight cannot have more than 45 g and the diameter is 42 mm.

There are different possibilities for the inner structure of a golf ball. On the market are balls, which consist altogether of an elastic synthetic material. Most balls however have a core of multiple layers, which is surrounded by a hard, 2 mm strong elastic shell. The core itself can consist for example of an elastic synthetic material or of a rubber core wrapped by rubber bands. Additionally there are golf balls whose core consists of a rubber ball, which is filled by a liquid or a soft mass. There is a wrapping of rubber bands around this core too which is added by a hard elastic shell.

Based on this structure it is evident that there is relatively few space to build in additional parts in the golf ball. But nevertheless this space should be sufficient to use the well known radar principle to locate these golf balls. The innovation here consists of the placing of one or more reflectors of radar waves in the mega- or gigacycles / second area within the elastic shell. To find a golf ball those reflectors are lightened

by a well known radar appliance while the reflecting signal is shown in the radar appliance and used to locate the ball. According to a model of this innovation these reflectors can be formed as foil antennas, which are preferably glued on the outer layer of the core. Those foil antennas are protected by the outer elastic shell of the golf ball.

Furthermore it is recommendable to use as location system the well known frequency double principle. Here the signal send by the radar appliance returns from the ball reflectors by double frequency. Therefore the reflectors consist each of a two/part foil antenna with a diode switched on the inner ends. This diode causes the doubling of the frequencies, which distinguish the signal reflected by the ball from other possible lightened reflectors. As diode the 'Varaktor-Diode' (also "Step and Recovery-Diode) is used preferably.

In this context the well known "Recco system" should be mentioned. It is used with great success by the avalanche rescue team. The search appliance of that system consists of a 5 watt transmitter which works in the frequency area of 915 MHz and a receiver which accordingly picks up the reflecting signals. The transmitter of that appliance sends by hand antenna a signal, which is reflected for example by reflectors of ski boots. Because this "Recco Reflector" has an antenna with a diode the signal, which goes to that reflector gets doubled and then returned to the receiver of the radar appliance.

The air range of that appliance is estimated around 60 m.

It can be concluded that such a radar appliance can be used to locate golf balls in the same way, given that those golf balls are equipped according to the innovation with a corresponding reflector foil.

Because such a golf ball has to be balanced very exactly it is necessary to spread the reflectors and if need be the diodes equally and symmetrically on the diameter of the golf ball's core. It will be wise anyway to equip such a golf ball with multiple reflecting antennas and an appropriate diode to receive a reflecting signal of the golf ball in each case.

Models of that golf ball are shown in the draft below:

Fig. 1 shows the diameter of a golf ball of one model,
Fig. 2 shows the diameter of another model.

According to the model based on Fig. 1 the golf ball consists of a rubber core 1., which is surrounded by 2. rubber bands. The whole core is surrounded by a hard shell 3, which is also elastic.

The cross-section in Fig 1 shows 2 foil antennas 4, 5 as well as 7,8. Between each foil 4 and 5 respectively 7 and 8 are put 'Varaktor Diodes'. These foils are glued on top of the inner core of the golf ball. Because the core as well as the hard shell of the golf ball consists of isolating material the metal reflectors can be put on without additional isolation.

According to the model Fig. 2 the golf ball consists of an inner rubber ball 10, which is filled with liquid or a soft mall. This inner core is surrounded by a wrapping of rubber bands11, directly under the hard shell 12. In accordance with Fig.2 in this model only the foil antenna 13 and 14 are planned. Both ends of that antenna are connected to a diode 15. If another antenna is added accordingly in vertical direction there can be a balance of the rubber ball.

Protection claims

1. Golf ball consisting of a one or multiple layered partly elastic core and a hard elastic shell, which surrounds this core. Its special features are the establishing of one or more reflectors (4,5,7,8,13,14) for radar waves in the mega- or gigacycles / second range within the elastic shell (3,12).

2. Golf ball according to claim 1, characterized as follows: the reflectors are established as foil antennas, which are put on the outer layer of the core, preferably glued.

3. Golf ball according to claim 1 and 2, characterized as follows: the reflectors consist each of a two-part foil antenna, where in between the inner ends a 'Varaktor Diode' is connected.

4. Golf ball according to claim 1 through 3, characterized as follows: the reflectors and if need be the diodes are spread equally and symmetrically on the perimeter of the core.

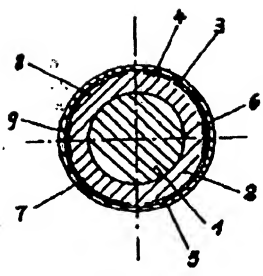

FIG. 1

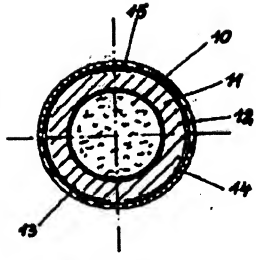

FIG. 2